CLAIMS

1. A polyester fiber structure comprising polyester fiber comprising a polyester polymer as the major component, characterized in that

said fiber structure is at least one type of fiber structure selected from the group consisting of nonwoven fabrics comprising said polyester fiber, wadding comprising said polyester fiber and fiber structures having thicknesses of 5-100 mm, comprising main fiber made of polyester stable fiber and thermal bonding conjugated staple fiber wherein said polyester polymer is comprised in either or both said main fiber and the thermal bonding composite stable fiber,

said polyester polymer is obtained by polycondensation of an aromatic dicarboxylate ester in the presence of a catalyst,

said catalyst comprises at least one ingredient selected from among mixture (1) and reaction product (2) below,

mixture (1) is a mixture of the following components (A) and (B):

(A) a titanium compound component composed of at least one compound selected from the group consisting of:

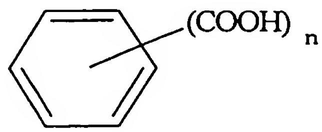
(a) titanium alkoxides represented by the following general formula (I):

$$R^1O\left(-\underset{\displaystyle OR^3}{\overset{\displaystyle OR^2}{Ti}}-O\right)_m R^4 \qquad \textbf{(I)}$$

[wherein R^1, R^2, R^3 and R^4 each independently represent one species selected from among C_{1-20} alkyl groups and phenyl groups, m represents an integer of 1-4, and when m is an integer of 2, 3 or 4, the two, three or four R^2 and R^3 groups may be the same or different], and

(b) reaction products of titanium alkoxides of

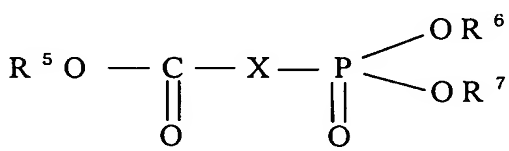
general formula (I) above with aromatic polyvalent carboxylic acids represented by the following general formula (II):



(II)

[wherein n represents an integer of 2-4]
or their anhydrides, and

(B) a phosphorus compound component composed of at least one compound represented by the following general formula (III):



(III)

[wherein R^5, R^6 and R^7 each independently represent C_{1-4} alkyl, and X represents at least one species selected from among $-CH_2-$ and $-CH_2(Y)$ (where Y represents phenyl)],

mixture (1) is used with a mixing ratio such that the ratio (%) M_{Ti} of the millimoles of elemental titanium in said titanium compound component (A) with respect to the number of moles of said aromatic dicarboxylate ester and the ratio (%) M_p of the millimoles of elemental phosphorus in the phosphorus compound component (B) with respect to the number of moles of said aromatic dicarboxylate ester satisfy the following relational expressions (i) and (ii):

$1 \leq M_p/M_{Ti} \leq 15$ (i)

$10 \leq M_p+M_{Ti} \leq 100$ (ii),

and reaction product (2) is the reaction product of the following components (C) and (D):

(C) a titanium compound component composed of at least one compound selected from the group consisting of:

(c) titanium alkoxides represented by the following general formula (IV):

$$R^{8}O\left[\begin{array}{c} OR^{9} \\ | \\ -Ti-O- \\ | \\ OR^{10} \end{array}\right]_{p}R^{11} \qquad \textbf{(IV)}$$

[wherein R^8, R^9, R^{10} and R^{11} each independently represent C_{1-20} alkyl, p represents an integer of 1-3, and when p is 2 or 3, the two or three R^9 and R^{10} groups may be the same or different], and

(d) reaction products of titanium alkoxides of general formula (IV) above with aromatic polyvalent carboxylic acids represented by general formula (II) above or their anhydrides, and

(D) a phosphorus compound component composed of at least one phosphorus compound represented by the following general formula (V):

$$(R^{12}O)_q-\underset{\underset{O}{\|}}{P}-(OH)_{3-q} \qquad \textbf{(V)}$$

[wherein R^{12} represents C_{1-20} alkyl or C_{6-20} aryl, and q represents an integer of 1 or 2].

2. A polyester fiber structure according to claim 1, wherein component (A) of said catalyst mixture (1) and component (C) of said reaction product (2) for the catalyst contains the respective titanium alkoxide (a) and titanium alkoxide (c) each in a reaction molar ratio in the range of 2:1 to 2:5 with respect to the aromatic polyvalent carboxylic acid or its anhydride.

3. A polyester fiber structure according to claim 1, wherein in said reaction product (2) for the catalyst, the reaction ratio of component (D) with respect to component (C) is in the range of 1:1 to 3:1, in terms of the ratio of the moles of phosphorus atoms in component

(D) to the moles of titanium atoms in component (C) (P/Ti).

4. A polyester fiber structure according to claim 1, wherein the phosphorus compound of general formula (V) for said reaction product (2) is selected from among monoalkyl phosphates.

5. A polyester fiber structure according to claim 1, wherein said aromatic dicarboxylate ester is produced by transesterification of an aromatic dicarboxylic acid dialkyl ester and an alkylene glycol ester.

6. A polyester fiber structure according to claim 1, wherein said aromatic dicarboxylic acid is selected from among terephthalic acid, 1,2-naphthalenedicarboxylic acid, phthalic acid, isophthalic acid, diphenyldicarboxylic acid and diphenoxyethanedicarboxylic acid or their ester-forming derivatives, and said alkylene glycol is selected from among ethylene glycol, butylene glycol, trimethylene glycol, propylene glycol, neopentyl glycol, hexanemethylene glycol and dodecanemethylene glycol.

7. A polyester fiber structure according to claim 1, wherein said polyester polymer has an L* value of 77-85 and a b* value of 2-5 based on the L*a*b* color system (JIS Z8729).

8. A polyester fiber structure according to claim 1, wherein said thermal bonding conjugated staple fiber comprises a heat sealing polymer and a fiber-forming thermoplastic polymer, with the heat sealing polymer exposed on the fiber surfaces.

9. A polyester fiber structure according to claim 1, wherein said thermal bonding conjugated staple fiber has a side-by-side structure.

10. A polyester fiber structure according to claim 1, wherein said thermal bonding conjugated staple fiber has a concentric or eccentric core-sheath structure, where the concentric or eccentric core is formed of said fiber-forming thermoplastic polymer and the concentric or

eccentric sheath is formed of a heat sealing polymer.

11. A polyester fiber structure according to claim 1, wherein said fiber-forming thermoplastic polymer is said polyester polymer.

12. A polyester fiber structure according to claim 1, wherein said heat sealing polymer is selected from among polyurethane elastomers, polyester elastomers, inelastic polyester homopolymers and copolymers, polyolefin homopolymers and copolymers, and polyvinyl alcohol polymers.

13. A polyester fiber structure according to claim 1, wherein said main fiber comprises said polyester polymer.

14. A polyester fiber structure according to claim 1, wherein a fiber structure with a thickness of 5-100 mm is thermally anchored at least at some of the points of contact between the thermal bonding conjugated staple fibers and main fibers and/or points of contact between the thermal bonding conjugated staple fibers themselves within said fiber structure.

15. A polyester fiber structure according to claim 1, which is used for purposes which involve contact with food.